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Number 1

## ON ERRORS HISTORY AND HERITAGE

One of the most fascinating aspects of the human brain relates to the way we learn, and how we store information. For instance learning how to tie shoe laces was something we learned as children, some of us had more trouble than others and for some the experience was so traumatizing that as adults they favor loafers (I am one of them). Be that as it may, we do not have to relearn every morning how to tie our shoes.

This blessing, however, does not come without its dangers, some tasks become so familiar that error is a given. I hate to do this to you, but just count the times you have to re-tie your shoes.

For us in the inspection business, familiarity with a procedure can have, at best annoying consequences. How many times I had to go back to a site because all of a sudden my brain alerted me that I had forgotten a control in an off position. This is really something easy to do, particularly when the customer has questions that need answering, and the inspection becomes a lecture. But at times the consequences can be serious particularly when your error combines with some other flaw in the system.

Only recently we began to design systems that take into account the way our brains operate. But room for improvement is great. My friends in the aerospace industry, or in other industries where the capacity for tolerating errors is small, talk about sigma this or sigma that. Sigma6 was for years the slogan at an aerospace concern which basically said that they engineered systems to relegate the possibility of a chance error to over six standard deviations or to almost a one-in-a-million occurrence.

Standardization of equipment is one area where process improvement can help. For instance, all of our photocopy machines operate on a face up principle, but there is one on the 7th floor which operates on the opposite principle. I do not have to tell you the waste of paper this guy is responsible for when I use that machine. On a more serious level, when I used to work in Northern Europe, I refused to take my left drive vehicle into the UK and I preferred to rent one there. The company may have seen this as extravagant behavior, but I got away by saying "What do you expect from a guy who never learned to tie his shoes." I guess that what I am trying to say here is that the ability of the brain to act on automatic pilot comes with a price, and the price is a rather predictable (and frequent) pattern of errors.

A British psychologist, James Reason explored this area in his book "Human Error". Get hold of it if you are interested in the subject of errors.

As the country was celebrating the birth of Martin Luther King, I began to think of the various contributions to technology that were done by African-Americans. One that came to my mind was the oil cup lubricator. I do not remember where I read it but it was one Elijah McCoy who invented it some one hundred and thirty years ago, and by doing so ushered us to an era where we have a name for the real stuff. Those who spent (or misspent as the case may be) their youth on board of ships will remember those long shafts supported by bearings

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### ***Also in this issue:***

*Changes to the Seattle Boiler and Pressure Vessel Code*

*The annual Washington State Boiler Inspector Association Meeting*

*Combination water heaters*

*Boiler in garages*

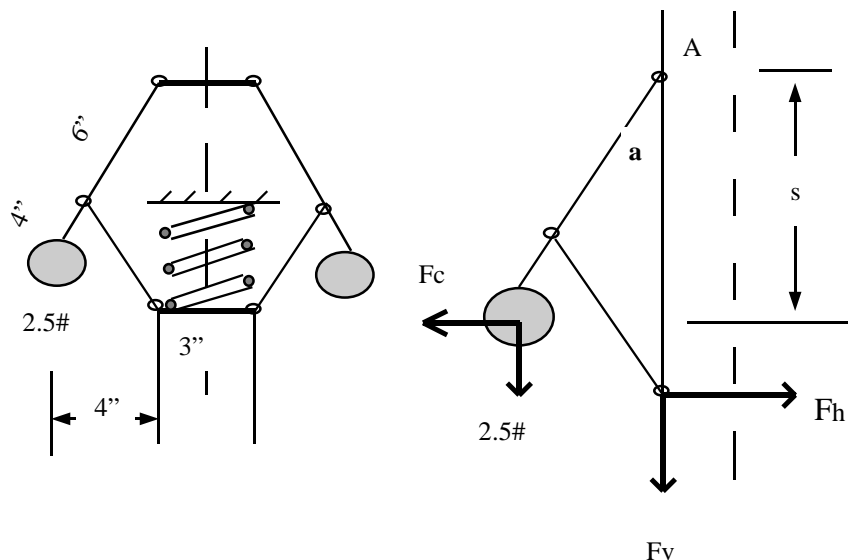
*Reducing stations, Repairs, and more, much more*

(Continued from page 1)

and each bearing had the real McCoy on it.

Once embarked on a historical trip, the mind began to wander, and not necessarily on other contributions by African-Americans. The Scottish born naturalist John Muir came to mind. We all know him for his nature preservation efforts, but few know that he had been a machinist and that he had been blinded in an industrial accident. Luckily for us, he regained his sight.

Also I receive a lot of questions from readers who are interested in the preservation and restoration of old equipment. Normally, I refer them to Lilly Tellefson of the Georgetown PowerPlant Museum or to the American Society of Mechanical Engineers ([www.asme.org](http://www.asme.org)) which has an active chapter on Heritage and History (I have heard that they are considering naming Gas Works as an historical site), but I could not pass up the reader who called as a proud new owner of a flyball governor. His mistake was to ask me how they work. Since this contraption in one version or the other came up in all sort of engineering exams (I ran into one myself in my first class on dynamics), I will inflict an explanation on everybody by working a little example. If the spring force is 30 lbs, what are the rpm of the device in that position?.



Two very good pictures of this device can be seen on Page 4 of Lilly's publication Turbine Times, in the article on the Corliss engine. The issue was January 1998.

By the way, Lilly is going to be one of the speakers at the WSBIA annual meeting (see page 10-11).

From the geometry  $\sin a = (4/(4+6))$  or  $a = 23.58$  degrees

$$s = (4+6) \cos 23.58 = 9.17''$$

Assume that  $F_v$  for one side is 15 lbs  $F_h/F_v = \tan a$  or  $F_h = 6.55$  lb.

Taking moments about point A and remembering that the centrifugal force  $F_c = M r \omega^2$  we get:

$$2.5/32.2 \times 4/12 \times 9.17/12 \times \omega^2 = 2.5 \times 4/12 + 6.55 \times (2 \times 6/12 \times \cos a) \text{ from which } \omega^2 = 345.36 \text{ and } \omega = 18.6 \text{ rad/sec or } \mathbf{177 \text{ rpm.}}$$

I began this article talking about errors and ended by discussing a flyball governor. I hope that I did not make any error in my work....otherwise I am going to hear from you. But if I did, my excuse is going to be the same. What do you expect from a guy who had so much trouble learning to tie his shoes. (Giovanni)

## Combination Water Heaters by Giovanni

I am referring here to domestic water heaters which are used for both domestic hot water and heating service. This is one of the topics on which I get my share of questions. Most of them come when some contractor gets to the permit counter to pull a permit on one of these units.

Water heaters which are listed for this combination (domestic hot water and space heating) can be used in residential applications, provided that both the domestic hot water and the heating circuits are connected.

The above are not casual words. The unit must be listed for the *dual* use. Using a regular water heater listed for domestic hot water only is not allowed for the combination.

Also, **both circuits must** be connected, using a listed combination water heater to provide heating only (I presume another water heater provides the domestic hot water) is not allowed. An ASME stamped boiler must be used for this "heating only" service.

Combination water heaters as described above can be used only for residential (i.e. five units or less) installations.

If you are installing a combination water heater which fits the above description, you do not need a boiler installation permit. However, you should talk to the Plumbers (see last page for their phone number) for their requirements.

To conclude, it may be good to review the parameters which define any water heater. If any of the following parameters is exceeded, the device is not a water heater, it is

a boiler and requires boiler stamping, controls, permits, and inspection.

Heat input of 200,000 btuh

Water temperature of 210 °F

Nominal water containing capacity of 120 gals

A pressure of 160 psi

## **BOILERS INSTALLED IN GARAGES** BY GIOVANNI

*In spite of several articles on this subject (I wrote two), we continue to see boilers installed in garages improperly (with less than 18" between the source of ignition and the floor of the garage).*

*It is unfortunate that this happens as it is costly to raise an already installed boiler.*

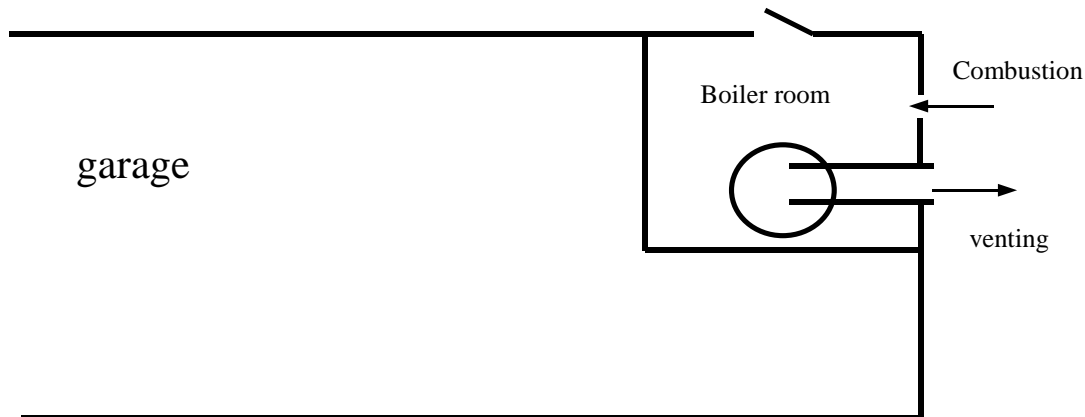
*There are two ways of avoiding this before it happens. One is to call me or the boiler inspector in your area and ask the question. The other is to be specific in your drawings. The plan examiner will catch the problem if the drawing is specific and shows the elevation. Unfortunately, most of the drawings (all that I have seen) just say boiler.*

*I will try a different tack this time and illustrate the exception. If your installation does*

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(Continued from page 3)

**not** look like the following sketch, then the source of ignition (glow, spark, or flame) capable of igniting flammable vapors must be 18" above floor level. (See Chapter 380.4 of the Seattle Boiler and Pressure Vessel Code)



If your installation looks like this sketch, with a boiler enclosed in a separate approved compartment having access only from the outside and with combustion air and venting to the outside of the garage, then you are exempted from the 18" from the floor provision.

## RMS TITANIC (by George Folta)

The "Old Chief" swiveled in his ancient chair and pressed the intercom button.

"Donna, will you get word to Inspector Glutz to step into my office when he returns, please?"

"Sure, Boss," she replied. and the Boss leaned back and reveled in the capabilities of his secretary, now called a "technical assistant." She could understand all those dialects on the phone; telephone operators that could barely speak English; maybe her new title was more descriptive.

"Boss, Inspector Glutz is on his way in from inspecting the boiler installation at that new hotel, the ' Rocky Mountain O' at the foot of the lake. That's a funny name for a hotel! Do you want me to put on the coffee pot; I imagine Inspector Glutz will want a couple of cups?"

"I'd appreciate it, Glutz does like his coffee. As to the hotel name, I don't know what that letter 'O' stands for."

Thirty minutes later Glutz stuck his head in the door. "You wanted me, Boss?"

"Yeah, don't you have a degree in mechanical engineering?"

"Yes sir."

"Did you study metallurgy?"

"Certainly, Boss, I got an 'A' in that course. Actually, to brag a little, I was number two in that class."

"Great, how many were in the class?"

"I was afraid you'd ask that; there were only two of us."

"Well, Mr. Glutz, that puts you in the lower half of the class!"

"I know, but she was teacher's pet, but in the end I won; I married her."

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"Great, I would like to hear more about that but right now grab a cup of coffee, pull up a chair, and prepare for an inquisition. I'm reading this report on steel and it says that there were very high levels of oxygen, phosphorous, and sulfur; I know that isn't good, but what does it do to steel?"

"Well, Boss, excess oxygen can form precipitates that embrittle the steel. Phosphorus can further the initiation of fractures, and in the absence of sufficient manganese sulfur reacts with iron to form iron sulfide at the grain boundaries. These sulfur particles under stress and loading can cause large cracks. The excess of these elements usually occurred when steel was produced by the open hearth method rather than the Bessemer process. May I ask why all the questions; are you looking at a 'Mill test report'?"

"No, I have been reading about the steel plating of the TITANIC. This report states that the ductile brittle transition temperature was found to be 20 °C. in one direction and 30°C. in the other direction compared with (-)15°C for a reference sample of A-36. And you know what I think of A-36. The water temperature that night was (-)2°C. No wonder the TITANIC broke up."

"Yes, Boss, we studied that in school, and it was determined that stress levels in the mid section of the ship were up to at least the yield strength of the steel just prior to sinking; however, the steel used in the TITANIC was the best available in 1909--1914 when the ship was built. The Gibbs & Cox report added that when 39,000 tons of water entered the bow not even a welded modern ship could have withstood the forces experienced by the TITANIC that fateful night. The great loss of life was due to the belief by all hands that the ship was unsinkable."

"It's a disgraceful shame that there weren't enough life boats and rafts for all the passengers," exclaimed the Boss scratching his head.

"It's not required. In fact the TITANIC was carrying more than required. Do you know that ships today are not required to carry sufficient rafts and lifeboats to hold 'all hands'. If a serious accident occurred at sea today, many of the passengers, not in a lifeboat or raft, but holding on, would probably die of hypothermia if rescue did not happen quickly. I wouldn't take a cruise on one of those big ships." Does that article you're reading give some of the interesting specifications about her?"

"No, fill me in if you know anything more," replied the Boss.

"Well, she had 29 boilers about 15 feet high, and each weighing about 100 tons; some were fired from both ends. She had three propellers. The two outboard ones were run by triple expansion reciprocating engines, but the center one was run by a Parson turbine. She carried 5,892 tons of coal, about enough for 7 days, and her 'Black Gang' numbered well over 300. She had 4 funnels, but the fourth one was a dummy and used for ventilation. Especially interesting to me was the fact that the RMS TITANIC was actually an American ship, not a British ship. She was owned by J.P. Morgan. Lastly, Boss, I know you like cigars. The loading supply list called for 8,000 cigars--all the best for those wealthy passengers."

"Thanks for all the info., by the way Donna wants to know what the 'O' stands for in that hotel's name 'Rocky Mountain O'."

A big grin spread across Glutz's face. "You know, Boss, I asked around but nobody

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would tell me. They just laughed. One guy did say that it had something to do with Montana."

*Metallurgical facts were taken from an article by Dan Deitz, Executive Editor of Mechanical Engineering, Vol. 120/No. 8.*

## REPAIR REMINDER by James Dorwin

As everyone who owns or maintains pressure vessels in this state *should* know, welding is not permitted on pressure vessels by organizations, or individuals, unless they are properly qualified in accordance with the local jurisdiction requirements. Here in Washington, the jurisdictions have established National Board requirements for repair to pressure retaining items. As stated in the 1995 NBIC (*National Board Inspection Code*), you must hold a valid "R" Stamp acquired from the National Board. In addition, the state will allow organizations who hold ASME Stamps, and who have acquired an "authorization" letter from the state, to repair vessels as defined in the letter. There are many specific requirements which go along with these stamps as well, such as welding qualifications and inspector involvement, which *must* be strictly adhered to. These codes and standards have been adopted across the world due to the severe consequences which *can* and *have* occurred with pressure retaining items throughout time.

The NBIC (RA-2120) states that in order for an organization to receive an "R" Stamp, the organization, "**a.** *shall have and maintain an Inspection Agreement with an Authorized Inspection Agency, b.* *shall have a written Quality System which complies with the requirements of this section and includes the expected scope of activities, c.* *have the current edition of the National Board Inspection Code, and d.* *have available a copy of the code of construction appropriate to the intended scope of work.*" The ASME Code has very similar requirements which must be met as well to receive an ASME Stamp. So as you can see, an Inspector and a written Quality System must be utilized. Failure to use either of these sources is unacceptable. A written Quality System is in place because it contains all pertinent information which will guide the organization into making *legal* and *safe* repairs. The Inspector is in place to ensure all Code requirements

for the repair are met. Bypassing any or both of these requirements is not only illegal, but unsafe.

By obtaining either an "R" or an ASME Stamp, the organization has accepted all the applicable requirements associated with these Code standards. NBIC RC-1060 states: "*The Inspector's authorization to perform a repair or alteration shall be obtained prior to initiation of a repair or alteration to a pressure retaining item.*" This means **all** repairs. The NBIC states other specific requirements which pertain to "Routine Repairs" and regular (i.e. non routine) repairs. But in **both** cases, the Inspector **must** be contacted and an exchange of communication must take place **before** the repair or alteration begins. Although this sentence in the NBIC does not specifically state *who* is responsible for contacting the Inspector, it is reasonable to assess that the organization performing the repair or alteration should be the contacting party. If an Inspector has specific detailed Code requirements for the job, who better to receive them than the repair organization (specifically the supervisor or welder). If the owner (customer) of the vessel performs the contacting function, will they deliver the *correct and complete information*? The possible answers to this question are, 1) maybe, 2) no, or 3) yes. If you were the repair organization, would you even want to risk receiving answers 1) or 2)? So, to make matters 100% foolproof, contact the Inspector yourself prior to beginning the repair or alteration.

As we all know, the consequence of an improper or unauthorized repair means money; and even worse, jeopardizing safety. So, to make things right and safe, follow your Quality Manuals, as they are written and always obtain acceptance from the Inspector before commencing the repair.

## PROPOSED REVISIONS TO THE SEATTLE BOILER AND PRESSURE VESSEL CODE by Giovanni

Last year, when the state announced their adoption of the ASME Code CSD-1 (Controls and Safety Devices for Automatically Fired Boilers) we ran several articles on this publication announcing the changes. At the same time we began to look at our code to see what changes were necessary to be in line with state's requirements. It is safe to say that there would have been no revision without CSD-1. However, since we were facing a revision we decided to make some other "house cleaning" changes. For instance, the existing code refers to obsolete edition of the Mechanical and Building Codes in the area of venting, combustion air, gas and fuel piping and building occupancies.

A list of the proposed amendments follows. **None** of these changes is **retroactive**. In addition to the adoption of CSD-1 for the fuel trains only, I call your attention to the relaxation in the frequency of internal inspection for a certain class of boilers (see Section 230).

### Section 100 - Exemptions from this Code

This section is amended to move a class of unfired pressure vessels previously excluded by definition and added to the list of boilers and pressure vessels exempted from the code.

### Section 160 - Definitions

This section is amended to include definitions found in CSD-1.

### Section 170 - Construction and Installation Code Requirements

Amendments to this section adopt and incorporate by reference the fuel train requirements of CSD-1 for all fossil fuel fired boiler installations with fuel input ratings of less than 12,500,000 btu/hr. In addition, this section sets forth Seattle modifications to CSD-1.

### Section 190 - Permits Required - Installation Permits

This section is amended to clarify that installation permits are required before the installation or replacement of new, used, or rental boilers and pressure vessels, and that permits are required for alteration/modification of existing controls.

### Section 220 - Inspection Requirements - New Installations

This section is amended to clarify that rental and used boilers are subject to certain testing.

### Section 230 - Existing Installations - Reinspection

This section is amended to clarify and reduce the frequency of internal inspections for certain boilers and pressure vessels operated under permit. Where construction and operating conditions permit, low pressure hot water heating boilers not using corrosion inhibitors shall be inspected every four years. For low pressure hot water heating boilers using corrosion inhibitors, glycol, or oil, the frequency of inspection will be determined by the inspector based on the history of the installation, adequacy of the corrosion inhibitors, tightness of the system, and other factors observed and considered by the inspector. All other boilers shall be inspected internally

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every year. This section is also amended to allow inspection of boilers and pressure vessels by third-party insurers.

#### Section 290 - Combustion Air

This section is amended to add cross references to applicable code sections.

#### Section 310 - Controls, Safety Devices, and Instrumentation

This section is amended to clarify under what conditions safety valve discharges must be extended outside the boiler room to a safe location, and to clarify this section's application to flow switches or manual reset type low water cutoffs. To this section is also added requirements specifying the conditions under which delay functions may be used and how such functions must be installed.

#### Section 320 - Boilers Certified as Automatic

This section is amended to make the references to these devices consistent with the language adopted in Section 160 and CSD-1, and to update references to National Fire Protection Association Standards.

#### Section 360 - Clearance Requirements

This section is amended to specify that the minimum clearance from any obstruction for boilers equipped with manhole openings shall be five feet.

#### Section 370 - Underground Installations

This section is amended to clarify that if a pit is covered, its cover shall be removable.

#### Section 380 - Boiler Rooms/Enclosures

This section is amended to specify that platforms shall be required around boilers having boiler controls, valves, manholes, or casing openings over ten feet above the floor.

#### Section 390 - Fuel Piping

This section is amended to update references.

#### Section 400 - Steam and Water Piping

This section is amended to extend the prohibition on the use of galvanized piping and fittings to hot water supply boilers and to prohibit the use of polybutylene tubing. The Boiler Code currently prohibits the use of galvanized piping and fittings for heating boilers because of the advanced degradation hot water causes to galvanized piping and fittings. The Plumbing Code prohibits the use of polybutylene tubing and no longer contains standards for its use; thus the Boiler Code is amended to reflect this change in the Plumbing Code. This section is also amended to allow use of certain plastic pipes for air piping according to the manufacturer's label, certification, or listing.

#### Section 410 - Pressure Reducing Valves

This section is amended to clarify where safety valves and pressure gauges shall be located.

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Another amendment to this section also clarifies when a bypass may be installed around a reducing valve and where safety valves must be located.

#### Section 420 - Elevator Machine Rooms/Spaces and Hoistways

Appendices stricken from this section. The appendices were never intended to be a part of this section, but their appearance in the text of the code made it appear that the appendices were related to this section.

#### Section 22.450.010 of the Seattle Municipal Code

This section is amended to let the public know copies of the current Seattle Boiler and Pressure Vessel Code are on file with the Department of Design, Construction and Land Use.

#### Section 500 - Appendices

This section is added to Seattle Municipal Code Chapter 22.450, which references other codes applicable to the installation, operation, and maintenance of boilers and pressure vessels.

## **STEAM REDUCING STATIONS**

By Giovanni

Section 410 of the Seattle Boiler and Pressure Vessel Code spells out the requirements of pressure reducing valves commonly found in steam process and distribution systems.

The most important item is the protection of the low pressure line downstream from the reducing valve. Should the reducing valve malfunction (e.g. stick in the open position) the low pressure steam line will "see" the high pressure.

One or more safety valves must be installed adjoining to or as close as possible to the reducing valve to prevent serious damage. The safety valves must be set a pressure not higher than the lowest pressure of any component or equipment in the low pressure system, and this includes the condensate line.

The combined discharge capacity of the safety valves must be sufficient to prevent the pressure rating of the lower pressure piping or equipment from being exceeded in case the reducing valves sticks open.

Since it is more economic to generate steam at a higher pressure and then reduce it where low pressure equipment so demands it, it is common to add water (attenuation) as the pressure reducing process will result in steam with a certain degree of superheating. The total capacity should take into consideration any steam generated through attenuation.

As usual, the discharge of the safety valve must be piped to a safe place to prevent injury to personnel (preferably outside the building), the safety valves must be properly supported, restricted, and drained to avoid condensation from accumulating in the discharge pipe.

A pressure gauge is mandatory on the low pressure side of the reducing valve, however, safety valves are not required if the entire low pressure system and equipment meets the pressure requirements of the high pressure side.

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**We have received the following two messages dated January 25, 1999 from Chris Fulton and Chris Villa, respectively Chair and Secretary of WSBIA, the Washington State Boiler Inspector Association**

Greetings:

I would like to extend an invitation to attend the 35th Annual Meeting of the Washington State Boiler Inspectors Association.

The meeting will be held on **Thursday, March 18, 1999** at the **Holiday Inn, Sea-Tac**, 17338 Pacific Hwy S, Seattle, Washington 98188, (206) 248-1000 (See map on reverse side for directions.) The Holiday Inn is located across from SeaTac Airport. Special rates are available (\$104 single or double occupancy) by mentioning that you will be attending our meeting (government rate).

Our topics / speakers are:

- *Rupture Discs, National Board of Boiler and Pressure Vessels Inspectors.*
- *Thermal Conversion Corporation; Thermal Conversion of Hazardous Materials.*
- *Foreign Boilers and Pressure vessels, National Board of Boiler and Pressure Vessels*
- *Implementation and Operation of Northwest's First Modern Cogeneration Plant, Valley Medical Center and Wieland Lindgren Engineers*
- *Update on Georgetown Power Plant, Georgetown Powerplant Museum*
- *An Introduction to the Northwest Steam Society, Northwest Steam Society*
- *Jurisdictional Updates*

Registration will begin at 7:45 a.m. with the meeting beginning at 8:30 a.m. The registration fee will be **\$25.00 at the door** and will include coffee and beverage breaks, lunch and a hospitality hour following the meeting. **Please note that the pre-registration fee is \$20.00 (see enclosed form). Pre-registration is appreciated!**

We made every attempt to assemble a comprehensive mailing list for this meeting but as we may have missed someone, please invite your business associates and others who may benefit from attending.

See you there....

## REGISTRATION FORM

# Washington State Boiler Inspectors Association

## 35th Annual Meeting - Thursday, March 18, 1999

Holiday Inn Sea-Tac, 17338 Pacific Hwy S., Seattle, WA 98188  
(Across from Sea-Tac Airport)

Registration - 7:45 a.m.    Call to Order - 8:30 a.m.  
Hospitality Hour - 4:45 p.m. to 6:00 p.m.

Dear Friends:

Our pre-registration fee for the Annual Meeting is set at \$20.00. This fee includes snack breaks, lunch and a hospitality hour following the meeting. **REGISTRATION AT THE DOOR IS \$25.00.**

For lunch, there are three options:

Menu A: Halibut Fillet, Salad, Potato or Rice, Vegetables, Rolls, & Dessert

Menu B: London Broil, Salad, Potato or Rice, Vegetables, Rolls, & Dessert

Menu C: Vegetable Lasagna, Salad, Seasoned Vegetables, Rolls, & Dessert

Please indicate your lunch selection on the return portion of the registration below.

We hope that you will find the program interesting and informative and that you will join us for the hospitality hour afterwards.

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Please return to:	Names of Attendees (1999 Meeting)	Lunch Choice (please circle one)
WSBIA	_____	A ____ B ____
C____		
PO Box 14321		
Seattle, WA 98114-0321	_____	A ____ B ____
C____		
A = HALIBUT FILLET	_____	A ____ B ____
C____		
B = LONDON BROIL	_____	A ____ B ____
C____		
C = VEG. LASAGNA	Number of attendees ____ x \$20.00 = _____	

(Please do not send cash)

(Continued from page 9)

The use of a bypass around the reducing valve merits some attention. A by-pass is essential to the operation should the reducing valve need maintenance or replacement. In some cases, the operation of the system depends on the continuous use of a by-pass, and the reason is found in the laws of economics. When the plant was built, the smallest possible reducing valve was purchased, but then the demand of low pressure steam increased because additional equipment was installed. If this happens, the plant will end up by operating with the reducer fully open and with the by-pass opened a few turns as well.

The code allows the use of a hand-controlled by-pass, however the by-pass cannot have a larger capacity than the reducing valve unless the low pressure side is adequately protected by a safety valve or is designed to withstand the upstream pressure.

Appendix G of the 1995 National Board Inspection Code has some great information on safety valves installed on the low pressure side of steam pressure reducing valves. However, I would like to offer a word of caution (Seattle has adopted the NBIC only for repairs/alterations). The discharge coefficients given in paragraph V are to be used only when actual coefficients are not known and "sizable" safety factors should be employed in this area.

Also, paragraph III b of the NBIC says that both the flow through the pressure reducer and the by-pass must be taken into consideration when sizing the safety valve. However, in paragraph IV, the implication is that the safety valve must be checked against "either" condition, but the conditions are not cumulative. I would caution designers against this assumption, particularly in view of what I said before about the laws of economics. I have seen a lot of systems operating with the reducer wide open and the by-pass getting there!

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The *Steamer* is generally published quarterly by the City of Seattle, Department of Design, Construction & Land Use, Boiler Pressure Systems Inspection Section. The intent of the publication is to provide information to interested persons in related fields. Readers are welcome to submit material for publication (subject to approval). Any materials submitted for publication will become the property of the Department unless prior arrangements are made. Readers are welcome to reprint any original material (the copyrights of others must be respected); we ask only that you credit the *Steamer* as the source.

## Washington State Boiler Inspectors' Association

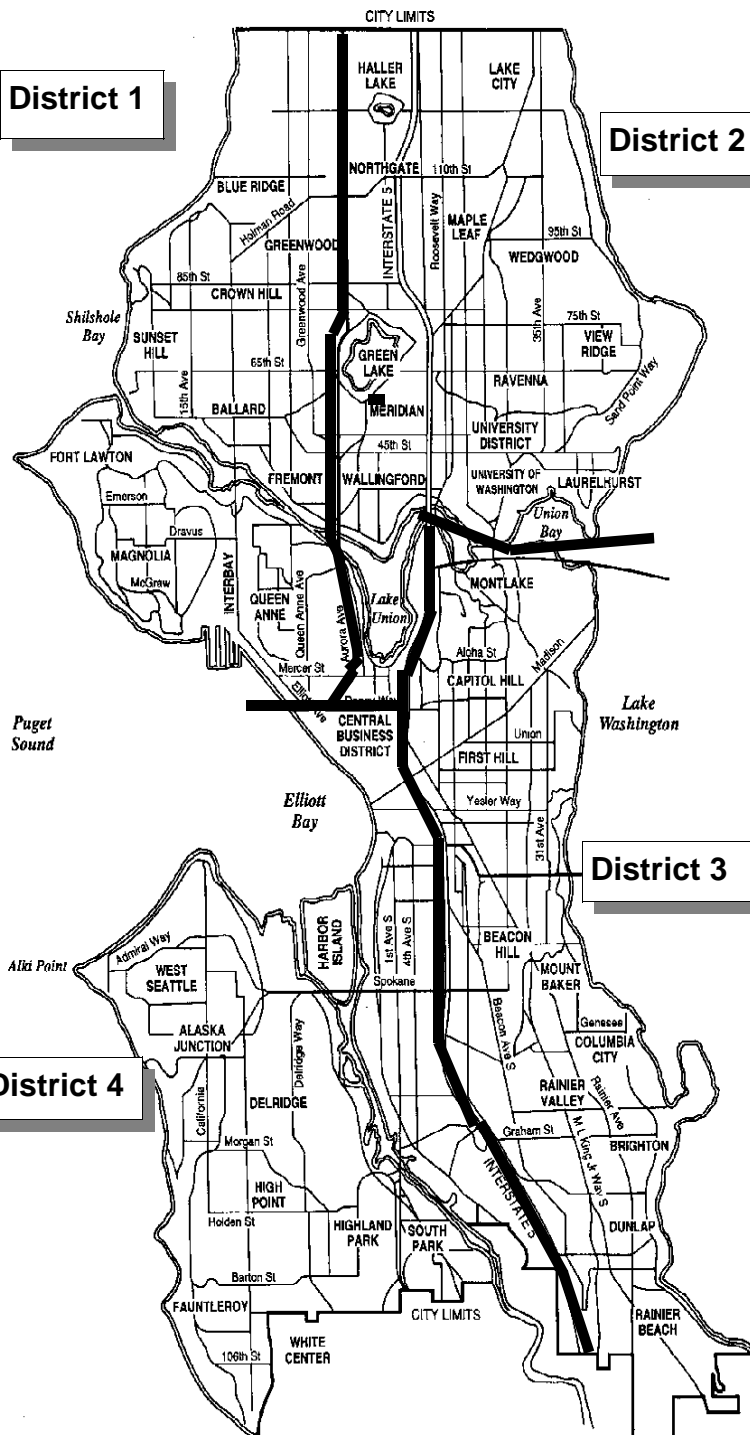
**Chris Fulton**, Chair (425) 454-3931  
Factory Mutual Engineering Assn.

**James Dorwin**, Vice Chair (425) 430-0494  
Hartford Steam Boiler

**Chris Villa**, Secretary/Treasurer  
(206) 684-8460 City of Seattle, DCLU

**Monthly Meetings** are held on the first *working* Monday of each month at Andy's Diner, 2963 - 4th Ave S., approximately two blocks north of Spokane Street. From I-5, take the Spokane Street exit, stay to your right, take the 4th Ave S. exit, then north a few blocks to the restaurant which will be on your left. Lunch is at noon and the meeting is called to order at 12:30 PM.

## Inspection Districts in Seattle



### INSPECTORS

District 1 - Chris Villa - 684-8460  
 District 2 - George Folta, 684-5366  
 District 3 - James McClinton, 684-8462  
 District 4 - Larry Leet, 684-8461

## Telephone Number Reference

### Seattle Dept. of Design, Construction & Land Use

#### Boiler Inspectors

Chris Villa	206-
684-8460	
George Folta	206-
684-5366	
James McClinton	206-
684-8462	
Larry Leet	206-
684-8461	
FAX (NEW)	206-233-
7902	

#### Chief Boiler Inspector/ Licensing Supv

Giovanni Ranieri	206-
684-8459	
email: giovanni.ranieri@ci.seattle.wa.us	

#### Administrative/Inspection/ Billing Info

Gloria Martin	206-
684-8418	
email: gloria.martin@ci.seattle.wa.us	

#### Steam/Refrigeration License Info/Exams

Evelyn Dunlop	206-
684-5174	
email: evelyn.dunlop@ci.seattle.wa.us	

### Seattle Public Utilities Department

#### Back Flow Prevention Questions/Insp.

Karen Lanning	206-
684-7408	
Bob Eastwood	206-
233-2635	
FAX	206-684-
7585	

### Plumbing Inspection In Seattle

Dick Andersen, Chief  
 206-233-7914  
 Ginger Ohrmundt, Permits  
 206-684-5198  
 Inspection Requests  
 206-233-2621

### State of Washington Boiler Inspection

Olympia - Main Office  
 Dick Barkdoll, Chief  
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**SITES AND VESSELS CURRENTLY INSURED - AS OF FEBRUARY 1999**

